DOCUMENT RESUME

ED 152 042 EC 110 032

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TITLE The Relationship of Self-Concept and IQ to Gifted Students' Expressed Need for Structure.
PUB DATE Mar 78
NOTE 17p.; Paper presented at the Annual Meeting of the American Educational Research Association (Toronto, Canada, March 1978)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Educational Needs; Elementary Education; Exceptional Child Research; *Gifted; Intelligence Quotient; *Performance Factors; Self Concept; *Task Performance

ABSTRACT

Compared were the structure needs (defined as assistance, advice, and approval required by a student to complete a task to his own satisfaction) of 27 gifted and 17 average elementary age students in completing an author designed, individually administered task. Structure needs were also analyzed relative to the IQ levels and self concepts of the gifted students. Structure needs were divided into two parts: task structure needs, which measured the amount of adult assistance the student required in making decisions; and environmental structure needs, which measured the amount of advice or approval the student required while completing the task. Gifted students were found to have lower task structure needs than the average student. No difference was found in environmental structure needs between average and gifted groups. Among the gifted students, task structure needs were found to be negatively correlated with IQ and environmental structure needs to be negatively correlated with self concepts. (SBH)

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THE RELATIONSHIP OF SELF-CONCEPT AND IQ TO GIFTED STUDENTS' EXPRESSED NEED FOR STRUCTURE

Peggy Guffin Glenn

Research on pupils' independence, when faced with in-school tasks, has been directed, for the most part toward the investigation of antecedent characteristics. For example, Sullivan (1975), Dillon and Franks (1975), and Newman and Campbell (1977) studied those attributes of children related to success in open classrooms. There have been no studies directed toward systematic investigation of parts of independence or its converse, need for structure.

The literature does contain, however, several studies which report that gifted students are more independent than average or dull students. These studies of Lucito (1964) and Smith (1964), imply that need for structure is a function of IQ level. The belief of certain psychologists, such as James (1890) and Labenne and Greene, (1969), that a person's appraisal of himself determines his behavior implies that need for structure is a function of self-concept. These suggest the possibility that IQ level and self concept are

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A paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada, 1978.

Session number 32.07

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related. Although some studies have concluded a relationship between these variables, (Piers and Harris, 1964, Gallagher, 1975), other studies concluded no significant relationship between IQ and self-concept, (Josephs and Smithers, 1975 Purkey, 1966, Smith, 1964).

According to Alexander and Hines (1966), the development of gifted education has been particularly influenced by the belief that IQ is related to independence. Many programs for gifted students are of very low structure and are based on independent learning. These programs expect students to assist, to varying degrees, in curricula planning and in course evaluation. Yet researchers, teachers, parents, and even students themselves indicate that gifted students need a surprisingly large amount of personal contact, even when functioning independently (Solomon, 1976, Josephs and Smithers, 1975, Hartnett, 1973). When this conflicting view about gifted students was found to be quite persistent, it became appropriate to reconsider the construct, need for structure.

My study was designed to compare the structure needs of average and gifted students and then analyze the relationships among intelligence levels, self-concepts, and structure needs of gifted students.

During the early phases of this study, it became apparent that a consideration of need for structure was, in fact, a study of two dimensions. First, structure has been described and referred to in the literature as being related to a task. In this context, structure refers to the number of

solutions pertinent to a problem or task and the number of paths through which those solutions might be reached. An increase in structure would thus imply a decrease in the number of solutions and/or paths. In short, this type of structure is characterized by the number of decisions a person must make in completing a task. This definition of structure appears to be that referred to by those who relate pupil's IQ to their independence. In this study this is referred to as task structure.

The second use of the term structure in the literature referred to the environment in which a person functioned. Specifically, structure was a description of the amount of approval, advice, or personal contact either offered to or required by an individual. This type of structure appears to be closely aligned with the psychologists' notion of independence. In this study this is referred to as environmental structure.

Method and Procedure

A group of seventeen average and twenty-seven gifted (high IQ) children from the third and fourth grades formed the sample for this study. The children came from a single suburban school which served as a neighborhood school and as a magnet school for children with an IQ greater than 125. For this reason, the school had a large (about thirty percent) gifted population. Although many of the gifted students were from adjoining districts, the school population reflected

its middle-class neighborhood. About sixty-five percent of the students of the school, and of the study, were white.

The students comprising the gifted group had IQ levels between 121 and 150 (Otis-Lennon Group IQ tests) and were previously screened by the school for admission to its program for gifted students. From the remaining students in the third and fourth grades, seventeen students with measured IQ scores between 90 and 110 were randomly chosen to form the comparison group for the study.

The IQ mean for the gifted group was 135.74 (S.d. of 7.73) and for the average was 99.82 (S.d. of 6.68) Means, medians, and standard deviations of the IQ scores for the students in the sample are provided in table form as Table 1.

The participating gifted students were given a short form developed by Garrison (1976) of the Piers-Harris Children's Self-Concept Scale (Piers and Harris, 1964).

An author designed task was used to assess structure needs, both task and environmental. The task provided many acceptable paths to many different possible solutions, was interesting to the participants, and of inherently low structure, such that structure could be added by the experimenter. This task was performed individually by each child participating in the study.

The task directed that each child prepare something which would help another child learn about a famous American. Supplies for writing, drawing, pasting, etc. were available

on a table and the participant was given unlimited time to complete the task. The child was encouraged to produce both a written (or dictated) product and a visual product of some type.

While the participant was working, the experimenter was available for answering questions, and giving any requested assistance. This task required a series of decisions. Using an evaluation sheet, the experimenter was able to score each participant on the amount of assistance required for making each decision and to list and total the questions asked by each participant.

The task evaluation sheet produced data which was basic to the study. Using pilot study results, six decisions were identified which a student had to make in order to complete the task. These were:

1. Determining the first decision to be made (i.e., deciding how to begin.)
2. Choosing a person.
3. Selecting a display medium.
4. Deciding what information to convey.
5. Choosing a second display medium.
6. Selecting information to convey on the second medium.

A student was scored using a 1,2,or 3 for each of these decisions based on the amount of assistance he needed in making the decision. Scores for the six decisions were totaled and are used as task structure scores in this study.

In addition, an environmental structure score was obtained from the same task. Each question asked by a student was recorded and a simple frequency count of the total number of questions asked was made for each student. This total number of questions is called environmental structure need score in this study.

Results

(a) A comparison of task and environmental structure needs of gifted and average students was made using a Mann Whitney U-test. The U values and confidence levels for comparison of children of different intelligence levels for both structure dimensions are given in table form as Table 2.

The statistical analysis (U=112.5, z=2.9, .002 significance level) indicated that these gifted students were more able to recognize and make decisions than were the average students. The conclusion was made that gifted students are more able to function independently and need less task structure than average students.

Although the task used in this study is different from the tasks used by Smith (1962) and Lucito (1964), the results here supplement their findings and conclusions that gifted students are more independent in task structure than those students of lower IQ levels.

No significant difference was found in the number of questions asked by the gifted and average students. The study therefore suggests that the amount of guidance, advice, and approval needed by gifted and average students is approx-

imately equal or that gifted pupils have environmental structure needs which are not significantly different from those of average pupils.

These conclusions are compatible with those of Brandwein (1955) and Alexander and Hines (1966) who indicated that bright students were more comfortable and more productive when they were given freedom of choice within a supportive, supervised environment than when working with freedom of choice (low task structure) and a low level of adult support.

(b) Kendall's Tau was selected for the analysis of relationships among intelligence levels, self-concepts, and structure needs of gifted students. (Results of this analysis is given as Table 3.)

A negative correlation (magnitude -.21, significance level. 08) between IQ scores and amount of assistance required in decision making was found. This suggests that among gifted sutdents, as in mixed average and gifted population, those students with higher IQ levels are more able to recognize and make decisions than those of lower IQ levels.

Also, as was the case in the heterogenous group, no measurable relationship was found between IQ level for the pupils and the number of questions asked by those pupils. This suggests that environmental structure need is independent of IQ level.

Self-concept of the gifted students was also considered as potentially relating to need for structure. The variable

which attempts to measure a person's appraisal of himself, was found to be negatively correlated (magnitude -34, significance level .01) with the number of questions asked by the gifted students. This means that those gifted students of relatively lower self-concept expressed a greater need for environmental structure (guidance, advice, and approval) than did those of relatively higher self-concept.

No correlation between IQ scores and self-concept scores of the gifted students was found. However, it was noted that the mean for self-concept scores of the gifted students was 20.22, whereas the mean for a group of non-gifted students in the same fourth grade classes was 16.92.

The operational definitions of environmental and task structure needs used in this study were not completely disjoint. When a student asked a question requesting assistance in decision making both his environmental structure score and his task structure score were increased. This was done because it was not possible to ascertain the motivation behind some questions. For example, when a student asked a question such as "Who do you think I should choose to describe?" his question could have several meanings. He could have been actually seeking suggestions because he had no ideas as to a selection or he chould have been seeking adult approval for the choice he had already made. Even with this confounding of scoring, however, task and environmental structure need scores were found to have very low correlation.

For gifted students the correlation was .16 and for gifted and average students combined the correlation was .09.

Discussion

The greatest implications of the study related to the role of teachers and their relationship to gifted students. It has been believed that gifted students can work well independently. The study supports this view only if independence is seen to relate to making and implementing decisions about tasks. The provision of support, advice, and guidance in the structuring of the environment cannot be linked to an IQ level.

The question is thus raised as to the responsibility of the school and teacher to the gifted students. Should the structure needs of the student be accommodated or should the student comform to the structure level provided by the school? It is the belief of this author that a third alternative, that of accepting the structure needs of the gifted child, while encouraging him to increase his independence is the most appropriate response.

The negative correlation of IQ with need for task structure indicates that the gifted can function with many paths and many solutions. Perhaps the correlation of self-concept with environmental structure provides a clue toward the decreasing of need for encouragement and support, i.e., environmental structure need.

Some of the literature suggests that self-concepts can be altered through the school relationship. The gifted

child may be assisted toward an increase in his confidence in his own ability by providing environmental structure and support whenever requested, or when the need is sensed by the teacher.

Felker (1974) suggested that praising children and teaching them to praise themselves were critical in increasing the self-concepts of those children. For the gifted child that praise may take the simple form of an acknowledgement by an adult that the child has again done exactly what was requested. Some children measure their level of worth by the number of times they are told that they have done well. If this is the case with the gifted, they need this kind of supportive reinforcement as much as those students of lower academic ability.

The reactions of the gifted students to the study task indicated that they enjoy working on a project which requires some independent, critical thinking and permits them to determine the ultimate outcome of the project. Since this is the purpose of independent study, it appears that independent study is indeed a satisfactory teaching strategy for gifted students. The study implies, however, that while the gifted students function well with low structure tasks, it should be anticipated that some gifted students will require teachers to be present to provide the guidance, approval, and personal contact of highly structured environments. The success of an independent study for these students

may hinge on the existence of the needed adult support. An independent study program whose design prohibits the availability of such personal adult contact should probably be limited to those gifted students who have demonstrated in some manner that they can function in an environment of such low structure.

This study suggests that the role of the teacher relative to the gifted students is two-fold. The provision of freedom in the selection of solutions and paths to those solutions is traditionally a part of gifted programming. To this must be added the expectation that a large number of gifted children will require the encouragement and support normally reserved for those of lesser intellectual abilities.

TABLE 1

Means, Medians, and Standard Deviations of the IQ Scores For Average and Gifted Students

IQ Level	N	Median	Mean	SD
Average	17	100	99.82	6.68
Gifted	27	127.25	135.74	7.73

TABLE 2

Comparison of Task and Environmental Structure Needs of Gifted and Average Students Using Mann-Whitney U-Test

Task Structure Need		Environmental Structure Need	
U-Value	112.50	U-Value	210.00
z	-2.90	z	-0.47
Confidence Level	.998	Confidence Level	.68

TABLE 3

Kendall's Tau Correlation Coefficients Relating Structure Need with IQ, Structure Need with Self-Concept, and IQ with Self-Concept Among Gifted Students

Question	Variables	T	Confidence Level
2	Task Structure X IQ Scores	-.21	.92
	Environmental Structure X IQ Scores	.00	.51
3	Task Structure X Self-Concept	-.09	.71
	Environmental Structure X Self-Concept	-.34	.99
4	IQ Scores X Self-Concept*	-.08	.72

*N=27

REFERENCES

Alexander, W. M., & Hines, V. A. Independent study in secondary schools. Gainesville: University of Florida, 1966.

Brandwein, P. F. The gifted student as future scientist. New York: Harcourt, Brace, 1955.

Chabassol, D. J. An attempt to validate a measure of structure in adolescence. Journal of Experimental Education, 1975, 43, 46-50.

Coopersmith, S. The antecedents of self-esteem. San Francisco, W. H. Freeman, 1967.

Dillon, S. V., & Franks, D. D. Open learning environment: Self identity and coping ability. The Educational Forum, 1975, 39, 155-162.

Felker, D. W. Building positive self-concepts. Minneapolis: Burgess Publishing Company, 1974.

Gallagher, J. H. Teaching the gifted child. Allyn and Bacon, Inc., Boston, Massachusettes, 1975.

Garrison, W. M. The use of the rasch measurement model in developmental self-concept research. Umpublished dissertation, Purdue University, December, 1976.

Hartnett, R. T. Learning style preference among college students. (Report No. BB-73-14; RDR-72-73-5). New York, NY: College Entrance Examination Board, February, 1973.

James, W. Principles of psychology. New York: Holt, 1890.

Josephs, A. P., & Smithers, A. G. Personality characteristics of syllabus-bound and syllabus-free sixth-formers. British Journal of Educational Psychology, 1975, 45, 29-38.

Labenne, W. D., & Greene, B. I. Educational implications of self-concept theory. Pacific Palisades, CAlifornia: Goodyear Publishing Company, Inc., 1969.

Lucito, L. J. Independence-comformity behavior as a function of intellect: Bright and dull children. Exceptional Children, 1964, 31, 5-13.

Newman, D. C., & Campbell, P. B. Characteristics of children in the open classroom. EDRS Document, February, 1977.

Piers, E. V., & Harris, D. B. Age and other correlates of self-concept in children. Journal of Educational Psychology, 1964, 55,91-95.

Purkey, W. W. Measured and professed personality characteristics of gifted high school students and an analysis of their congruence. Journal of Educational Research, 1966, 60, 99-104.

Smith, D. C. Personal and social adjustment of gifted adolescents. Council for Execptional Children. Washington, D.C., 1964. (Research Monograph Series A, No. 4)

Solomon, D., & Kendall, A. J. Individual characteristics and children's performance in "open" and "traditional" classroom settings. Journal of Educational Psychology, 1976,68, 613-625.

Sullivan, J. Open . . . traditional . . . what is the difference? The Elementary School Journal, 1974, 74, 493-500.

Wylie, R. C. The self-concept. Lincoln: University of Nebraska, 1974.